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SOME INDICATORS OF HEALTH CARE STATUS IN CROATIA

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The article presents the basic principles of health care, health care measures and strategic objectives of these measures in Croatia. The health of the population does not depend solely on the activities of the health care system but also on various demographic indicators. Our success in implementing health care depends largely on the structure of health facilities and health workers. The Croatian health system in late 2013 had permanently employed 74,489 workers. Out of these, 77% were health care workers. Most health care workers had only secondary school education (37.7%); physicians represented 17.4% of the workforce. On assessing the health of the population, certain health indicators are of utmost importance. The leading cause of deaths were circulatory diseases (in 2012, 24,988 persons died, 585.5/100,000). Neoplasms were the cause of death in 13,940 persons (326.6/100,000), then injuries and poisoning (69.1/100,000), diseases of the gastrointestinal system (53.1/100,000), and respiratory diseases (50.4/100,000). Data are presented on the basis of diseases reported from several national registries (cancer, psychoactive drug abuse, the disabled, diabetes, and suicides). The importance of vaccination for the control of infectious diseases in Croatia is especially emphasized, as well as the experience and excellent results achieved in this area. The epidemiological situation in Croatia in terms of infectious diseases can be assessed as favorable. This is due to the general living conditions, which contributed to the entire health system, making Croatia equal to other developed countries of Europe and throughout the world.

Key words: health care, morbidity and mortality rates, national registries, vaccinations, Croatia

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PRINCIPLES, MEASURES AND STRATEGIC GOALS OF HEALTH CARE IN THE REPUBLIC OF CROATIA

In the Republic of Croatia, health care is determined by the Constitution. Every citizen is guaranteed the right to health care in accordance with the law (1). One of the fundamental acts that refer to the organization of health care is the Health Care Act (2). This Act defines the notion of health care stating that health care is a set of activities for the protection and improvement of health, disease prevention, early detection, timely treatment, medical care and rehabilitation. The State in particular protects motherhood, children and youth, and creates social, cultural, educational, financial and other conditions as to ensure the right to a dignified and healthy life. Everyone is obliged, within their powers and activities, to give special attention to the protection of human health, wildlife and the environment.

The principles of health care are:

- comprehensive health care that includes the entire population,
- continuity of health care is achieved by the overall organization of health care, particularly at the level of primary health care that provides continuous health care for people of all ages,
- accessibility of health care is achieved through a distribution of medical institutions that provide the population with equal opportunities for health care,
- a holistic approach to primary health care is provided by the implementation of integrated measures to improve health, disease prevention, and treatment and rehabilitation, and
- access to specialist counseling and hospital care is provided by organizing and developing specialized clinical and public health achievements with skills and their practical application.

Measures of health care represent a set of measures to preserve and improve health of every member of the community. When planning health care measures, one should place importance on the broadest definition of health, which is defined by physical, mental and social well-being. In doing so, early detection of pathological changes leads to treatment without specific effects on later health and quality of life. However, concerning people with permanently damaged health, the aim is to ensure that they have longer functional independence. This is achieved through a number of measures that range from improving health to preserving any such functionality. Therefore, measures of health care constitute a set of measures and procedures that apply to each member of the community, for certain (mostly disadvantaged) groups, and finally to all members of the community in order to sustain health.

The strategic objectives of health protection measures are as follows: firstly, implementation of health promotion programs to increase the level of health of the population as a whole by reducing the prevalence of health risk factors. The main risk factors for health are lack of mobility, poor diet, excessive food consumption, excessive daily salt intake, smoking, alcohol consumption, drug use, increased levels of sugar or cholesterol in the blood, prolonged stress, high blood pressure, or even more dangerous, a combination of several factors. It is necessary to promote and implement health promotion programs that are simplest and least expensive, and at the same time most effective. Secondly, the aim is to reduce morbidity, mortality and disability from diseases, injuries and conditions that can be influenced by preventive measures and effective health care. All efforts are invested to reduce the influx of new patients or those with permanently damaged health (disabled) and to reduce mortality associated with specific pathological conditions. Programs for early detection of certain deviations from normal values (elevated sugar, high cholesterol, high blood pressure, elevated tumor markers value, etc.) or early detection of pathological substrates (Pap test, cytology of tissue fragments, histologic examination of tissue samples, ultrasonography, computed tomography, magnetic resonance imaging, etc.) have been employed. It is necessary to pay special attention to health status and measures to improve health of the population groups at risk. It is important to define such groups and the risks to which they are exposed (3, 4, 5).

BASIC DEMOGRAPHIC INDICATORS

Health care and health of the population do not solely depend on the activities of the health care system and cannot be viewed separately from demographic, economic and environmental indicators, and the educational structure of the population. According to the 2011 census, Croatia had 4,284,889 inhabitants (6). Demographic changes were affected by long-term birth rate decline, increased mortality among younger age groups during the war, and negative migration trends in the past decade. Since 1991, Croatia has been seriously depopulated. In 2013, the birth rate was 9.4/1000, mortality rate 11.8/1000, general fertility rate 41.8/1000, and negative natural population -2.4. Life expectancy at birth in 2012, according to the Central Bureau of Statistics, was 77.0 years (80.1 years for women and 73.9 years for men). The infant mortality rate in 2013 was 4.1/1000 (7).

MEDICAL INSTITUTIONS AND HEALTH WORKERS

Institutions that provide health care are state-owned, county-owned and private. The state-owned institutions are clinics, clinical hospital centers and state health institutes. The county-owned institutions are health centers, clinics, general and specialized hospitals, pharmacies, emergency medicine institutions, nursing homes and county public health institutes. In 2013, a total of 5590 private practices were recorded (clinics, laboratories, private practice pharmacists, private practice physical therapists and home care). More than 18% of special hospitals and rest homes are private.

In late 2013, the health system had 74,489 permanently employed workers, 77% of these health care professionals. Most health care workers had secondary school education (37.7%), and physicians represented 17.4% of the workforce. Among the employed medical doctors, the proportion of women was 61.4% and 70.6% of specialists were women. The distribution of medical doctors according to the type of medical institution is shown in Table 1. Two nurses were employed *per* doctor in 2013 (8, 9).

Table 1.

Distribution of medical doctors according to type of medical institution (2013)

Medical institution	Percentage
Hospital	59.1
Health center	9.3
Health company	13.4
Private practice	5.0
State health institute	4.0
Polyclinic	4.7
Emergency care station	4.1

HEALTH INDICATORS

According to the data released by the Croatian Institute of Public Health for 2013, the general/family medicine health care was used by 76.4% of insured persons. Contribution of some diseases in general medicine practice is shown in Table 2. The most frequent were respiratory system diseases, followed by cardiovascular diseases, musculoskeletal system and connective tissue disorders. Less represented were diseases of the genitourinary system, endocrine diseases, nutritional and metabolic diseases, diseases of the skin and subcutaneous tissue, mental illnesses and disorders, diseases of the gastrointestinal system, injuries and poisoning (8). The order of diseases in the past years has not changed significantly (10).

Table 2.

Contribution of some diseases in general medicine practice in Croatia (2013)

Disease	Percentage
Respiratory system	16.1
Heart and blood vessels	11.7
Musculoskeletal system and connective tissue	11.3
Genitourinary system	5.8
Endocrine system	5.7
Skin and subcutaneous tissue	5.4
Mental illnesses and disorders	5.3
Digestive system	4.8
Injuries and poisoning	4.6

In the area of health care for infants and young children, 82.5% of insured patients used health care services. The most common diseases among children were respiratory diseases (35.7%), followed by infectious and parasitic diseases (10.0%), diseases of the ear (6.4%), and diseases of the skin and subcutaneous tissue (5.9%).

Preventive and specific health care of school children was carried out as part of the public health program. The program of physical examinations in the 2012/2013 academic year covered 94% of all students. All the elementary school third-grade children were included in screening for disorders of color vision, and in sixth-graders for developmental and structural disorders of the locomotor system.

According to the report from the Occupational Health Service, almost half a million physical examinations were conducted in 2013, with preventive examinations of employees accounting for 64% of this number. The largest number of injuries occurred at the workplace (81.6%), however, the figure was by 12.4% lower as compared with the year before.

Regarding female health care in 2013, the total proportion of women who chose their primary health care gynecologists was 36.5%. In primary health care, the most frequent were visits of pregnant women, with a mean number of examinations reaching 5.2 *per* pregnancy. Those with high-risk pregnancies were monitored in specialist-consultative hospital health care. Out of the most common diseases and conditions in 2013, menopausal and perimenopausal disorders (10.4%) were predominant, followed by procedures related to the prevention of unwanted pregnancies (8.5%) and other factors that influence health status and contact with health services (8.2%).

Part of the collected and processed data has been stored in the registries of a particular disease or pathological condition. Registries are one of the most sophisticated statistical epidemiological tools in public health. They track and monitor individuals with certain health impairments individually and throughout their life. This is especially true in chronic diseases registries. Regular health statistics cannot provide information on the number of people with a chronic illness and their fate after diagnosis and treatment. Therefore, registries have been introduced as to provide an insight into the various aspects of chronic and other diseases from the public health rather than clinical point of view. In Croatia, there are national registries for cancer, psychoses, suicides, diabetes, psychoactive drug addicts, acquired immunodeficiency syndrome (AIDS), active tuberculosis, legionnaires' disease and occupational diseases.

The leading causes of death in 2013 are shown in Table 3. Three-quarters of all death causes in Croatia were from these two groups of diseases (8).

Table 3.

The leading causes of death in Croatia (2013)

Causes of death	Incidence (per 100.000)
Diseases of circulatory system	585.5
Neoplasm	326.6
Injury and poisoning	69.1
Diseases of digestive system	53.1
Diseases of respiratory system	50.4
Accident	49.3
- fall	24.4
- suicide	18.2
- homicide	1.2

REGISTRIES OF CHRONIC DISEASES AND CONDITIONS

The Cancer Registry was established in 1959 with the aim of collecting, processing and analyzing data on cancer incidence. Since 1994, the Croatian Cancer Registry has been full member of the International Association of Cancer Registries (IARC) based in Lyon, France, and it is also member of the European Network of Cancer Registries (ENCR). In order to get an insight into the importance of such a registry, here are some basic indicators obtained by analyzing data from the Registry for 2013. The incidence rate was 490.4/100,000 (men 551.0 and women 433.8). The five most common cancer sites according to sex are shown in Tables 4 and 5 (11). Regarding the incidence of cancer, in Croatia it is comparable to other developed countries (12).

Table 4.

The five most common cancer sites in men (2013)

Site	Percentage
Trachea, bronchus and lung	19
Prostate	15
Colon	8
Bladder	7
Rectum and sigma	6

(Puntarić et al.)

Table 5.

The five most common cancer sites in women (2013)

Site	Percentage
Breast	24
Trachea, bronchus and lung	8
Colon	8
Uterus	7
Ovary	5

(Puntarić et al.)

All information on persons treated for psychoactive drug abuse in the health care system has been collected and monitored since 1978 in the Registry. During 2013, medical institutions registered 7857 people who were treated for psychoactive drug dependency. People younger than 20 accounted for 7.8% of all addicts and the majority of recovering addicts were between 30 and 34 years old (25.4%). Morphine type of addiction was most common among treated addicts (80.4%), while cannabis was present in 13.3% of the cases. The mean age at first consumption of cannabinoids was 16.3 years.

The Croatian Registry of Persons with Disabilities became operational in 2002. Accurate data on disabled people disability are a prerequisite for planning appropriate preventive measures and programs for people with disabilities. Croatia has recognized the problem and adopted appropriate legislation. There are records on 11.9% of disabled people (13).

The National Registry of People with Diabetes was founded in 2000 with the aim of improving health care of people with diabetes, determining the incidence and prevalence of diabetes and its acute and chronic complications, and monitoring morbidity and mortality and other clinical indicators at the national level. In 2013, there were 241,990 adults (aged ≥18 years) diagnosed with diabetes (7.1% of this segment of the population).

According to the Registry, the lowest number of suicides was recorded in 1995 (19.4/100,000), and in the 2000-2013 period (from 20.9 to 18.1/100,000). The proportion of male and female suicides in the same period ranged from 2.2 to 3.7. Even in this area, Croatia does not differ significantly from other countries (14).

INFECTIOUS DISEASES AND IMMUNIZATION

Monitoring, research, prevention and control of infectious diseases is of major importance and because of that it has been legally defined by multiple acts and regulations, the most important being the Health Care Act, Protection of the Population from Infectious Diseases Ordinance on the manner of reporting infectious diseases, Ordinance on the manner of implementation of mandatory immunization, seroprophylaxis and chemoprophylaxis (15, 16).

In accordance with these acts and regulations, the Department of Infectious Diseases and Epidemiology of the Croatian National Institute of Public Health, which is the referral center of the Ministry of Health for epidemiology, plays the role of the so-called CDC (Center for Disease Control and Prevention), and acts as the center of information for reporting and monitoring communicable diseases and monitoring the implementation of the most important prevention and epidemic control measures implemented by many and varied stakeholders in the health care system, from family doctors to clinical departments. Within this system, there are specially educated and equipped epidemiological services in public health institutions (8).

The most important data and indicators of infectious diseases in Croatia in 2013 are described here. A very

low incidence of bacillary dysentery (19) and hepatitis A (16) has been reported as a result of favorable general improvement in hygiene and sanitary conditions in the country. Thanks to a very thorough implementation of the vaccination program in our country, the diseases against which vaccination is available also have a low frequency, e.g., diphtheria (n=0), tetanus (n=1), pertussis (n=109), measles (n=0), rubella (n=1) epidemic parotitis (n=35), and poliomyelitis (not a single case since 1989 and declared eradicated in 2002). Salmonellosis is relatively common, but in the last ten years, the number of cases has gradually declined (1254 cases recorded in 2013). Tuberculosis has also been on a decline (537 cases or 12.5/100,000). The situation with sexually transmitted diseases is also relatively favorable, with a low incidence of syphilis (80), gonorrhea (14) and AIDS (19). AIDS has been present in Croatia for the last 28 years, since the appearance of the first cases (1986) and remains at a low level thanks to the systematic application of an array of measures for the prevention, surveillance of products derived from human blood, to health education and awareness (8).

The national program of mandatory vaccination is one of the most extensive and most successful preventive health activities in the country. Despite the recent controversy and debate in the public about the justification of conducting such programs at the time when the importance of many infectious diseases has been significantly reduced, this planned execution is an obligation not only for citizens who are vaccinated, but for doctors who conduct vaccination, as well as for the organizers and financiers of the program. Such an attitude is justified by the results achieved in the reduction of morbidity, disability and mortality from diseases against which the public is vaccinated. For example, the following numbers of cases were reported in 2013: diphtheria (n=0), tetanus (n=1), pertussis (n=109), measles (n=0), rubella (n=1), epidemic parotitis (n=35), and poliomyelitis (n=0). Obligatory vaccination included diphtheria (since 1948, when there were up to 1400 cases *per* year); tuberculosis (since 1950 with about 20,000 cases *per* year); tetanus (since 1955, over 200 cases *per* year); pertussis (since 1959 with over 10,000 cases); poliomyelitis (since 1961 with 550 cases *per* year); measles (since 1968 with more than 20,000 cases *per* year); rubella (since 1975 with about 20,000 cases *per* year); and measles (since 1976 with 14,000 cases *per* year). The program is constantly being improved based on the best professional assessment and gradual expansion. In 1999, vaccination against hepatitis B was introduced among sixth-graders, and vaccination against *Haemophilus influenzae* type b in infants has been carried out since 2002. In the same year, tetanus vaccination for the 60-year-olds was introduced. In 2007, hepatitis B vaccination for infants was introduced. In addition to the mandatory vaccination program in Croatia, according to epidemiological indications, vaccination against flu, rabies, hepatitis B and hepatitis A, pneumococcal and meningococcal disease, yellow fever, tick-borne encephalitis and cholera has been conducted. Analysis of the covered percentage of planned vaccination in 2013 shows that the primary vaccination recorded covered the legally prescribed minimum (95%). The booster shot percentages are high as well.

The epidemiological situation in Croatia in terms of infectious diseases in 2013 could be, as in previous years, considered favorable. Apart from the health care system, general living conditions have certainly contributed to health care. This makes Croatia comparable to other developed countries of Europe and throughout the world. Apart from other diseases, even tuberculosis has seen a downward trend with a rate of 12.5/100,000. In addition to these favorable facts, it is important to keep in mind that sometimes there are poor sanitary and hygienic conditions, especially in terms of waste disposal. Still present are the consequences of war, war and post-war migration of people. All these represent risk factors for the possible occurrence of some infectious diseases (17). There is also the possibility of new infectious disease outbreaks or emerging diseases (such as Ebola in 2013) (18).

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